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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,389	12/04/2003	Jitendra Mohan	NSC1P285/P05744	8125

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EXAMINER
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HAFIZ, MURSALIN B

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/729,389

Applicant(s)

MOHAN ET AL.

Examiner

Mursalin B. Hafiz

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 October 2005.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.  
 4a) Of the above claim(s) 18-25 is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-5, 7-13, and 15-17 is/are rejected.  
 7) ☒ Claim(s) 6 and 14 is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 5) ☐ Notice of Informal Patent Application (PTO-152)  
 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Claims 1-17 in the reply filed on October 25, 2005 is acknowledged. The applicant did not provide any specific argument. Hence, the claims 18-25 are withdrawn and the election is made FINAL.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 8, 9, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 8 and 16, it is not clear what particularly is the invention regarding "a portion oriented toward said geometric center."

Regarding claims 9 and 17, they are dependent upon claims 8 and 16.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohuchi (US 6,590,287 B2).

Regarding claim 1, Ohuchi discloses in Fig. 1(b) an apparatus comprising:  
a semiconductor substrate [1]; and  
first and second support structures [7 and 11] formed on the substrate, the second support structure [11] at least partially surrounding the first support structure [7] on the substrate [1],

the first and second support structures [7 and 11] each configured to support an electrical connector [5] to be formed over the first and second support structures on the substrate [1]. Above limitation is merely the function of the support structures.

Regarding claim 2, Ohuchi discloses the first and second support structures each overlay electronic circuitry fabricated on a semiconductor die, which is not shown but it is an inherent feature of the device. The contact is made to make connection between electronic circuitry, which are always made on a semiconductor die.

Regarding claim 3, Ohuchi discloses in Fig. 1(b) the second support structure [11] is electrically insulated [3 is the insulator] from the first support structure [7]. Reducing the capacitance generated between the second support structure and the electronic circuitry is merely functional language. "[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

Regarding claim 10 and 11, Ohuchi discloses in Fig. 1(b) an assembly for supporting an electrical connector with minimal parasitic capacitance, comprising:

first and second pads [7 and 11] formed on a semiconductor substrate [1], the first and second pads underlying a solder bump [5] interconnect and overlaying electronic circuitry, and electronic circuitry is fabricated on a semiconductor die [it is an inherent feature of the device. The contact is made to make connection between electronic circuitry, which are always made on a semiconductor die];

the second pad [11] at least partially surrounding the first pad [7] so as to support the solder bump interconnect; and

the second pad [11] being electrically insulated from the first pad [7] so as to reduce the capacitance generated between the second pad and the electronic circuitry.

Regarding claim 12, even though Ohuchi does not show that the first support structure comprises a substantially circular cross-section, it is an inherent feature. Because it results in evenly formed bond, often time circular pads are used.

3. Claims 1-5, 7, 10-13, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Venkateswaran (US 6,780,673 B2).

Regarding claim 1, Venkateswaran discloses in Fig. 14 an apparatus comprising:  
a semiconductor substrate [34]; and

first and second support structures [44 and 62] formed on the substrate, the second support structure [62] at least partially surrounding the first support structure [44] on the substrate [34],

the first and second support structures [44 and 62] each configured to support an electrical connector [50] to be formed over the first and second support structures on the substrate [34]. Above limitation is merely the function of the support structures.

Regarding claim 2, Venkateswaran discloses the first and second support structures each overlay electronic circuitry fabricated on a semiconductor die, which is not shown but it is an inherent feature of the device. The contact is made to make connection between electronic circuitry, which are always made on a semiconductor die.

Regarding claim 3, Venkateswaran discloses in Fig. 14 the second support structure [62] is electrically insulated [60, channel] from the first support structure [44]. Reducing the capacitance generated between the second support structure and the electronic circuitry is merely functional language. "[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

Regarding claim 4, Venkateswaran discloses in Fig. 16 the first support structure [44] comprises a substantially circular cross-section.

Regarding claim 5, Venkateswaran discloses the first support structure is made of aluminum [column 5 line 65].

Regarding claim 7, Venkateswaran discloses the second support structure is made of aluminum [column 5 line 65].

Regarding claim 10 and 11, Venkateswaran discloses in Fig. 14 an assembly for supporting an electrical connector with minimal parasitic capacitance, comprising:

first and second pads [44 and 62] formed on a semiconductor substrate [34], the first and second pads underlying a solder bump [5] interconnect and overlaying electronic circuitry, and electronic circuitry is fabricated on a semiconductor die [it is an

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inherent feature of the device. The contact is made to make connection between electronic circuitry, which are always made on a semiconductor die];

the second pad [62] at least partially surrounding the first pad [44] so as to support the solder bump interconnect; and

the second pad [62] being electrically insulated from the first pad [44] so as to reduce the capacitance generated between the second pad and the electronic circuitry.

Regarding claim 12, Venkateswaran discloses in Fig. 16 the first support structure [44] comprises a substantially circular cross-section.

Regarding claim 13, Venkateswaran discloses the first support structure is made of aluminum [column 5 line 65].

Regarding claim 15, Venkateswaran discloses the second support structure is made of aluminum [column 5 line 65].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohuchi (US 6,590,287 B2) in view of Su et al (US 2002/0182773 A1).

Regarding claim 5 and 13 Ohuchi does not disclose that the first pad is made of aluminum, whereas Sue teaches analogous apparatus having aluminum pad [page 2 paragraph 0019]. It is well know in the art that aluminum is a very good conductor and

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has very good bonding property with substrate. Hence, it would have been obvious to one with ordinary skill in the art at the time of the invention to make the first pad of aluminum.

***Allowable Subject Matter***


5. Claims 6 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Prior art does not teach Second pad substantially annular cross-section located approximately concentric with the first pad.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mursalin B. Hafiz whose telephone number is 571-272-8604. The examiner can normally be reached on m-f 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**GEORGE ECKERT**  
**PRIMARY EXAMINER**